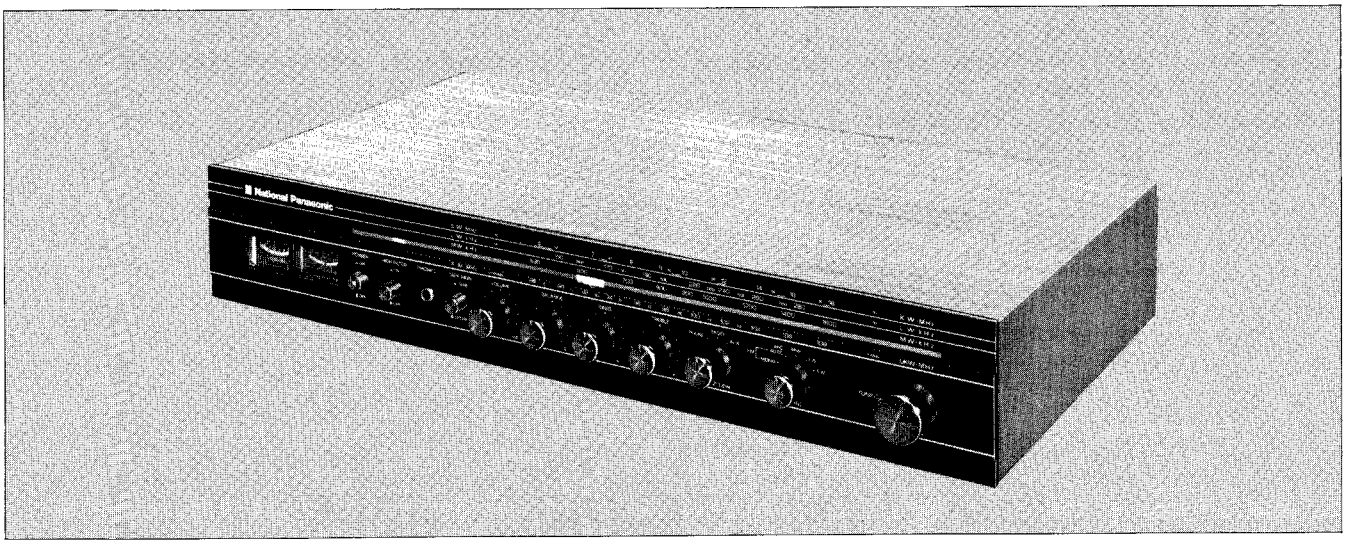
ORDER NO. TSD-7601-247

Service Manual

Compact Stereo

FM/LW/MW/SW STEREO RECEIVER

SG-250R/25Q



Specifications

AMPLIFIER SECTION

Power Output	MPO 2 × 32 W (THD 1%, 4 ohms) RMS 2 × 27 W (THD 1%, 4 ohms) One Channel Driven RMS 2 × 22 W (THD 1%, 4 ohms) Both Channel Driven
Frequency Response	10 Hz ~ 25 kHz, ±1.5 dB (DIN)
Input Sensitivity and Impedance:	
Phono	2 mV, 47k ohms
Aux	300 mV, 100k ohms
Tape	300 mV, 30k ohms
Rec. Out and Impedance	DIN: 30 mV, 82k ohms
Tone Controls	
Bass	+10 dB ~ −10 dB at 50 Hz
Trebel	+10 dB ~ −16 dB at 10 kHz
High Filter	−6 dB/oct. from 7 kHz

FM TUNER SECTION

Frequency Range	87.5 MHz ~ 108 MHz
Intermediate Frequency	10.7 MHz
Sensitivity	2.5 μV (IHF) 3.5 μV (S/N 26 dB, MOD 40 kHz) (DIN)
Image Ratio	45 dB (98 MHz)
Signal to Noise Ratio	60 dB (at 1 kHz, 60 dB, 40 kHz) (Unweighted) (DIN)
Distortion	0.6% (MONO) (at 1 kHz, 60 dB, 100%) 0.8% (STEREO) (at 1 kHz, 60 dB, 100%)
Stereo Separation	35 dB (at 1 kHz, 60 dB, 30%) ≧30 dB, 250 Hz~ 6.3 kHz (60 dB, 30%) (DIN) ≧18 dB, 6.3 kHz ~ 12.5 kHz (60 dB, 30%) (DIN)

AM TUNER SECTION

Frequency Range	MW: 525 kHz~ 1,605 kHz (572 m ~ 187 m) LW: 145 kHz ~ 285 kHz (2,070 m ~ 1,050 m) SW: 5.9 MHz ~ 18 MHz (50.8 m ~ 16.7 m)
Intermediate Frequency	455 kHz (except UK: 470 kHz)
Sensitivity	MW: 100 μV/m for 50 mW (1 MHz) LW: 250 μV/m for 50 mW (220 kHz) SW: 8μV for 50 mW (12 MHz)
Image Ratio	MW: 45 dB (1 MHz) LW: 43 dB (220 kHz) SW: 15 dB (12 MHz)

POWER CONSUMPTION ..... 155 W

POWER SUPPLY ..... AC 100 V, 120 V, 220 V, 240 V, 50/60 Hz

DIMENSIONS (W × H × D)

Center Unit ..... 552 mm × 105 mm × 306 mm (21-25/32″) × (4-1/8″) × (12-3/64″)

WEIGHT

Center Unit ..... 7.4 kg (16 lb. 5 oz.)

* Specifications are subject to change without notice for further improvement.

National Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

DISASSEMBLY INSTRUCTIONS

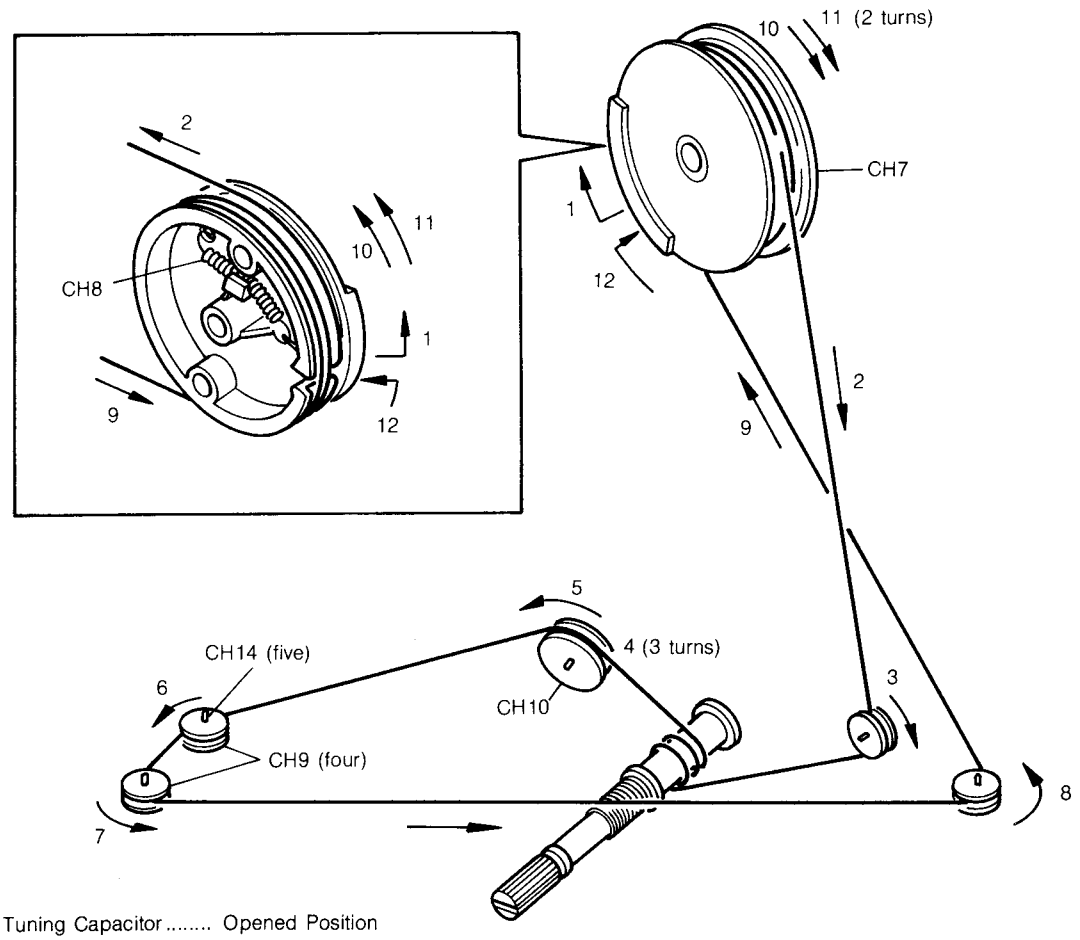
■ **To Replace Faulty Components**

1. Remove seven (7) knobs from escutcheon.
2. Remove three (3) rear board mounting screws Nos. 6 ~ 8, as shown in Fig. 3.
3. Remove four (4) bottom board mounting screws Nos. 1 ~ 5, as shown in Fig. 3.
4. Lift cabinet from chassis assembly.
5. Unsolder faulty components and replace it with new one.
6. To reassemble, reverse above procedure.

■ **To Remove Escutcheon from Chassis**

1. Refer to above instructions 1 to 4.
2. Remove three (3) escutcheon mounting screws Nos. 9 ~ 11, as shown in Fig. 3.
3. To reassebmle, reverse above procedure.

DIAL CORD STRINGING GUIDE



Tuning Capacitor..... Opened Position
Dial Cord Length..... 165 cm

FIG. 2

LOCATION OF PARTS

Screws:
❶ ~ ❹ CH27
❺ ~ ❽ CH26
❾ ~ ⓫ CH25

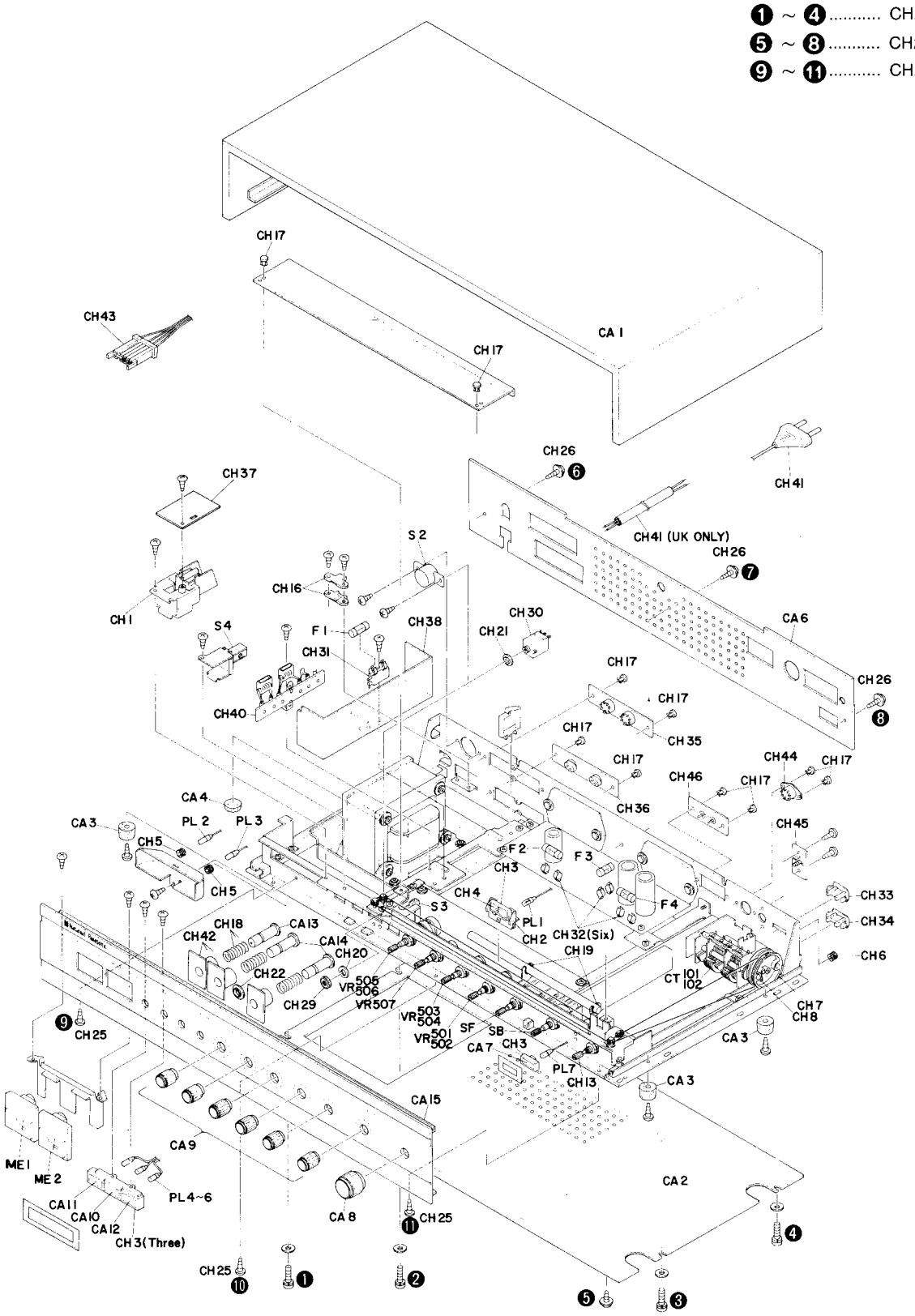


FIG. 3

ALIGNMENT INSTRUCTIONS (RADIO)—1

AM IFT	
T201 (AM 1st IFT)	455 kHz (UK: 470 kHz)
T203 (AM 3rd IFT).....	455 kHz (UK: 470 kHz)
LW	
L205 (OSC Coil).....	145 kHz
L202 (ANT Coil)	145 kHz
CT204 (OSC Trimmer)	285 kHz
CT202 (ANT Trimmer).....	285 kHz
MW	
L204 (OSC Coil).....	550 kHz
L201 (ANT Coil)	550 kHz
CT204 (OSC Trimmer)	1,500 kHz
CT201 (ANT Trimmer).....	1,500 kHz
SW	
L206 (OSC Coil).....	5.9 MHz
L203 (ANT Coil)	5.9 MHz
CT206 (OSC Trimmer)	18 MHz
CT203 (ANT Trimmer).....	18 MHz
FM IFT	
T101 (FM 1st IFT).....	10.7 MHz
T204 (FM Disc. IFT)	10.7 MHz
T205 (FM Disc. IFT)	10.7 MHz
FM-RF	
L104 (OSC Coil).....	90 MHz
L101 (ANT Coil)	90 MHz
L102 (DET Coil)	90 MHz
CT103 (OSC Trimmer)	106 MHz
CT101 (ANT Trimmer).....	106 MHz
CT102 (DET Trimmer).....	106 MHz
FM STEREO	
T301 (MPX Coil) (Pre-aligned) VR301 (Separation Control), VR302 (Stereo Eye Level Adjust)	

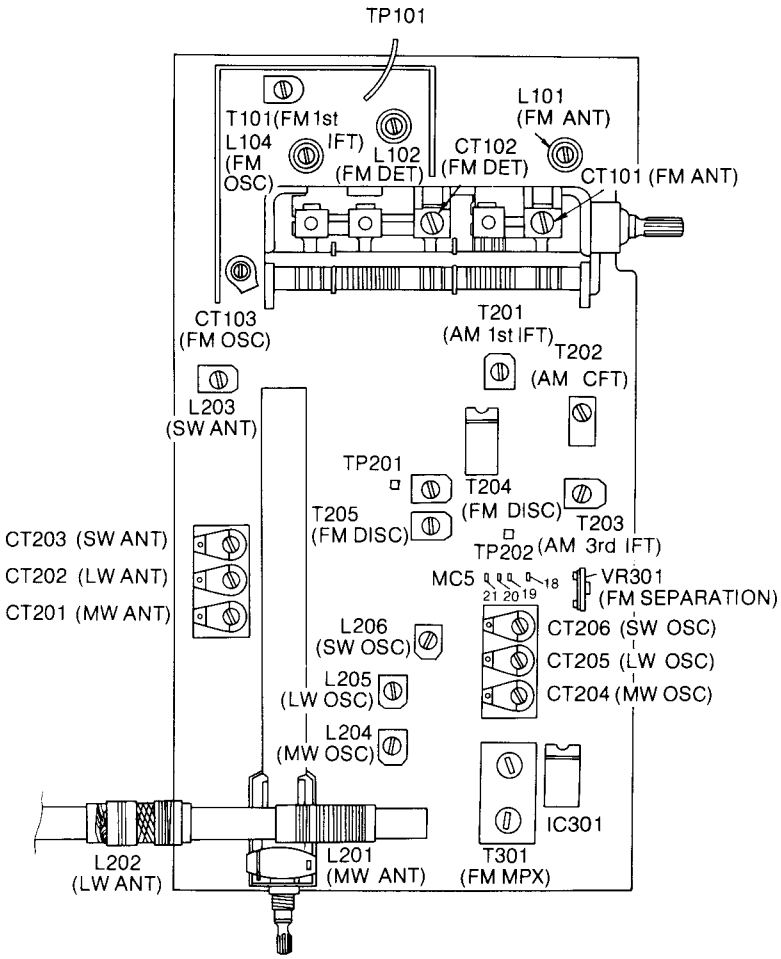


FIG. 4 ALIGNMENT POINTS

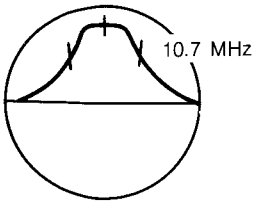


FIG. 5

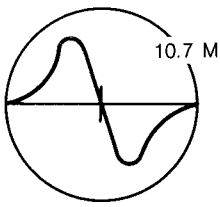


FIG. 6

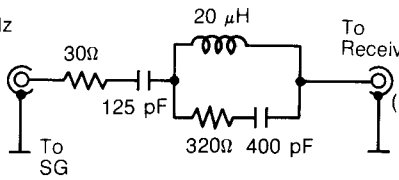


FIG. 7

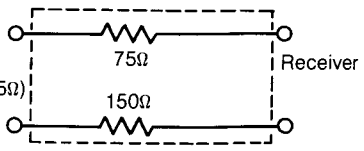


FIG. 8 DUMMY ANTENNA

ALIGNMENT INSTRUCTIONS (RADIO)—2

FREQUENCY AND DISTANCE ON DIAL SCALE

To accurately align to the proper frequencies on the dial scale, refer to Table at right and mark the edge of the dial scale accordingly, using the "Start Point" mark on the dial scale as a reference point.

BAND	FREQUENCY	DISTANCE FROM "START POINT"
LW	145 kHz 285 kHz	16.1 mm 195.0 mm
MW	550 kHz 1,500 kHz	22.3 mm 191.2 mm
SW	5.9 MHz 18.0 MHz	8.4 mm 206.2 mm
FM	90 MHz 106 MHz	28.7 mm 179.3 mm

Notes:
1. Volume Control ..... Maximum (AM-IF and RF, FM-RF) Minimum (FM-IF)
2. Bass and Treble Control... Center
3. Balance Control ..... Center
4. Band Selector ..... LW, MW, SW, FM MONO, FM AUTO
5. Power Switch ..... ON
6. High Filter..... OFF
7. Tape Monitor..... SOURCE
8. Output of signal generator should be no higher than necessary to obtain output reading.
9. Make certain that speaker system is connected to the tuner when aligning.

STEP	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUST	REMARKS
	CONNECTION	FREQUENCY				
AM-IF and RF ALIGNMENT						
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz	Point of non-interference. (on/about 600 kHz)	Output meter across speaker jack (L). (Imp. 4 Ω)·(UK: 8 Ω)	T201 (AM 1st IFT) T203 (AM 3rd IFT)	Adjust for maximum output.
2 (LW)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	145 kHz 30% Mod. with 400 Hz	145 kHz (16.1 mm)	Output meter across speaker Jack (L). (Imp. 4 Ω)·(UK: 8 Ω)	L205 (LW OSC Coil) L202 (LW ANT Coil)	Adjust for maximum output by sliding coil L202 along ferrite core.
3 (LW)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	285 kHz 30% Mod. with 400 Hz	285 kHz (195 mm)	Output meter across speaker jack (L). (Imp. 4 Ω) (UK: 8 Ω)	CT205 (LW OSC Trimmer) CT202 (LW ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
4 (MW)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550 kHz 30% Mod. with 400 Hz	550 kHz (22.3 mm)	Output meter across speaker jack (L). (Imp. 4 Ω) (UK: 8 Ω)	L204 (MW OSC Coil) L201 (MW ANT Coil)	Adjust for maximum output by sliding coil L201 along ferrite core.
5 (MW)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500 kHz 30% Mod. with 400 Hz	1500 kHz (191.2 mm)	Output meter across speaker jack (L). (Imp. 4 Ω) (UK: 8 Ω)	CT204 (MW OSC Trimmer) CT201 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
6 (SW)	Connect to EXT antenna and ground through SW Dummy antenna. (Refer to Fig. 7)	5.9 MHz 30% Mod. with 400 Hz	5.9 MHz (8.4 mm)	Output meter across speaker jack (L). (Imp. 4 Ω) (UK: 8 Ω)	L206 (SW OSC Coil) L203 (SW ANT Coil)	Adjust for maximum output by sliding coil L203 along ferrite core.
7 (SW)	Connect to EXT antenna and ground through SW Dummy antenna. (Refer to Fig. 7)	18 MHz 30% Mod. with 400 Hz	18 MHz (206.2 mm)	Output meter across speaker jack (L). (Imp. 4 Ω) (UK: 8 Ω)	CT206 (SW OSC Trimmer) CT203 (SW ANT Trimmer)	Adjust for maximum output. Repeat steps (6) and (7).

Note: T202 is pre-aligned. Do not touch it.

ALIGNMENT INSTRUCTIONS (RADIO)—3

STEP	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUST	REMARKS
	CONNECTION	FREQUENCY				
FM-IF and DETECTOR ALIGNMENT						
1	High side through 0.001 mfd to point TP101. Common to chassis.	10.7 MHz (400 kHz SWP.)	Point of non-interference (on/about 98 MHz)	Connect vert amp. of scope to point TP201. Common to chassis.	T101 (FM 1st IFT) T204 (FM Disc. IFT)	Adjust for maximum amplitude and symmertrical curve (Refer to Fig. 5)
2	High side through 0.001 mfd to point TP101. Common to chassis.	10.7 MHz (400 kHz SWP).	Point of non-interference (on/about 98 MHz)	Connect vert. amp. of scope to point TP201. Common to chassis.	T205 (FM Disc. IFT)	Adjust for maximum amplitude and proper linearity between ±100 kHz markers. (Refer to Fig. 6)
*** Before aligning step 1, turn the core of T205 fully counterclockwise.**						
FM-RF ALIGNMENT						
1	Connect to EXT. FM antenna terminal through Dummy antenna. Common to chassis. (Refer to Fig. 8)	90 MHz 30% Mod. with 400 Hz	90 MHz (28.7 mm)	Output meter across speaker jack (L). (Imp. 4 Ω)	L104 (FM OSC Coil) L101 (FM ANT Coil) L102 (FM DET Coil)	Adjust for maximum output.
2	Connect to EXT. FM antenna terminal through Dummy antenna. Common to chassis. (Refer to Fig. 8)	106 MHz 30% Mod. with 400 Hz	106 MHz (179.3 mm)	Output meter across speaker jack (L). (Imp. 4 Ω)	CT103 (FM OSC Trimmer) CT101 (FM ANT Trimmer) CT102 (FM DET Trimmer)	Adjust for maximum output. Repeat steps (1) and (2).
*** As three output readings will be present, adjustments must be made at center frequency.** *** To correct drift at the FM dial scale (87.5 or 108 MHz), adjust coil L104 and trimmer CT103 with each other.**						

FM STEREO ALIGNMENT

Notes:
1. Stereo Modulator: Connect Stereo Modulator to EXT. Mod. terminal of signal generator
2. Signal Generator: Modulation Rate of 19 kHz Pilot Signal 10%
   Output Level..... 30 dB
   Frequency..... Approx. 98 MHz
3. Tuner: Volume Control ..... Audible level of speaker sound
   Treble and bass Control ..... MIN
   Band Selector ..... FM
   Balance Control..... Center
   Band Selector ..... FM AUTO

19 kHz AMP. ALIGNMENT

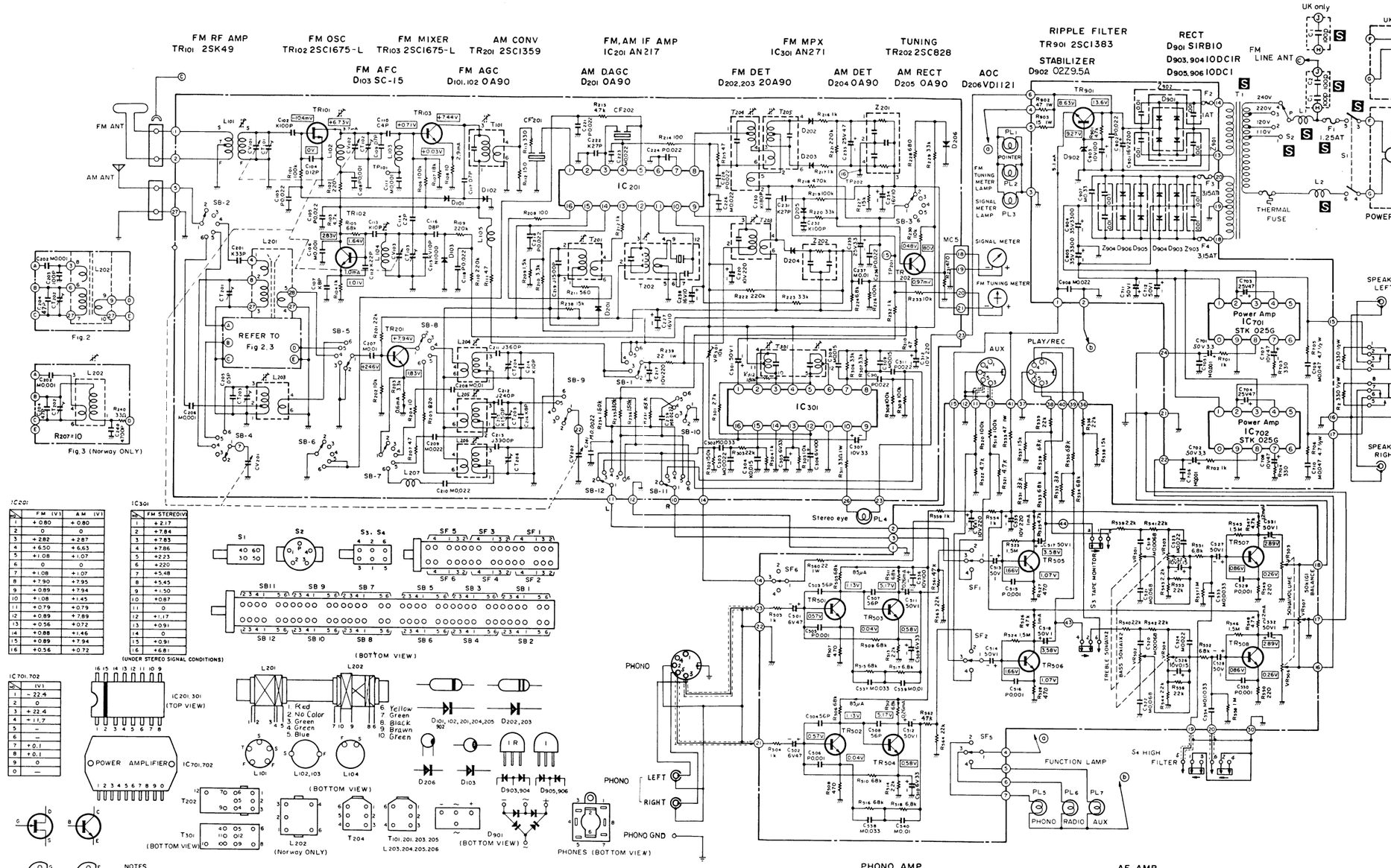
EQUIPMENT CONNECTION		ADJUST	REMARKS
SIGNAL GENERATOR	OSCILLOSCOPE		
Connect to EXT. FM antenna terminal through dummy antenna. (Refer to Fig. 8)	—	(T301)	Pre-aligned. Do not touch it.

SEPARATION ALIGNMENT

Notes:
1. Signal Generator: Modulation Rate of 19 kHz Pilot Signal 10%
   Modulation Rate of Right and Left Signal 27%
   Output Level..... 60 dB
2. Tuner (Balance Control): Adjust balance control Level so that output level from both channels becomes equal.
3. Treable and bass Control ..... MIN
4. **Set pointer of FM tuning meter to center.**

EQUIPMENT CONNECTION			ADJUST	REMARKS
SIGNAL GENERATOR	VTVM	OSCILLOSCOPE		
connect to EXT. FM antenna terminal through dummy antenna. (Refer to Fig. 8)	Connect across speaker jack. (left side) (Imp. 4 Ω)	Connect vertical amp. input of scope to terminals of VTVM.	VR301 (Separation Control)	Adjust VR301 for minimum indication on VTVM from the left side output when the right side of stereo modulator is modulated. Adjust VR301 in the same way for the right side. Adjust for best balance between "L to R" and "R to L" separation.

SCHEMATIC DIAGRAM OF MODEL SG-250R/25Q



IC201	FM (V)	AM (V)
1	+0.80	+0.80
2	0	0
3	+2.82	+2.87
4	+6.50	+6.63
5	+1.08	+1.07
6	0	0
7	+1.08	+1.07
8	+7.90	+7.95
9	+0.89	+7.94
10	+1.08	+1.45
11	+0.79	+0.79
12	+0.89	+7.89
13	+0.56	+0.72
14	+0.88	+1.46
15	+0.89	+7.94
16	+0.56	+0.72

IC301	FM STEREO(V)
1	+2.17
2	+7.84
3	+7.83
4	+7.86
5	+2.23
6	+2.20
7	+5.48
8	+5.45
9	+1.50
10	+0.87
11	0
12	+1.17
13	+0.91
14	0
15	+0.91
16	+6.81

(UNDER STEREO SIGNAL CONDITIONS)

IC701,702	(V)
1	-22.4
2	0
3	+22.4
4	+11.7
5	—
6	—
7	+0.1
8	+0.1
9	0
0	—

IC201,301 (TOP VIEW)
IC701,702
POWER AMPLIFIER
(BOTTOM VIEW)
L201
L202
1. Red
2. No Color
3. Green
4. Green
5. Blue
6. Yellow
7. Green
8. Black
9. Brown
10. Green
D101,102,201,204,205 902
D202,203
D206
D103
D903,904
D905,906
L101
L102,103
L104
T202
T301
L202 (Norway ONLY)
T204
T101,201,203,205
L203,204,205,206
D901
TR1
TR102,103,201,202,501,502,503,504,505,506,507,508,901

NOTES
1) S1 : POWER SWITCH IN "OFF" POSITION
S2 : POWER VOLTAGE SELECTOR IN "240V" POSITION (P.COMMON 1.110V 2.120V 3.220V 4.240V)
S3 : TAPE MONITOR SWITCH IN "SOURCE" POSITION
S4 : HIGH FILTER IN "OFF" POSITION
SF1~6 : FUNCTION SELECTOR SWITCH IN "RADIO" POSITION
SB1~12 : BAND SELECTOR SWITCH IN "FM MONO" POSITION
2) Letters M, P, K, J indicate tolerance of capacitors as follows
M ±20% P +100% -0% K ±10% J ±5%
3) DC Voltages are to be measured with VTVM under no signal condition in "MW, LW, SW," "FM" POSITION

| | | |

REPLACEMENT PARTS LIST

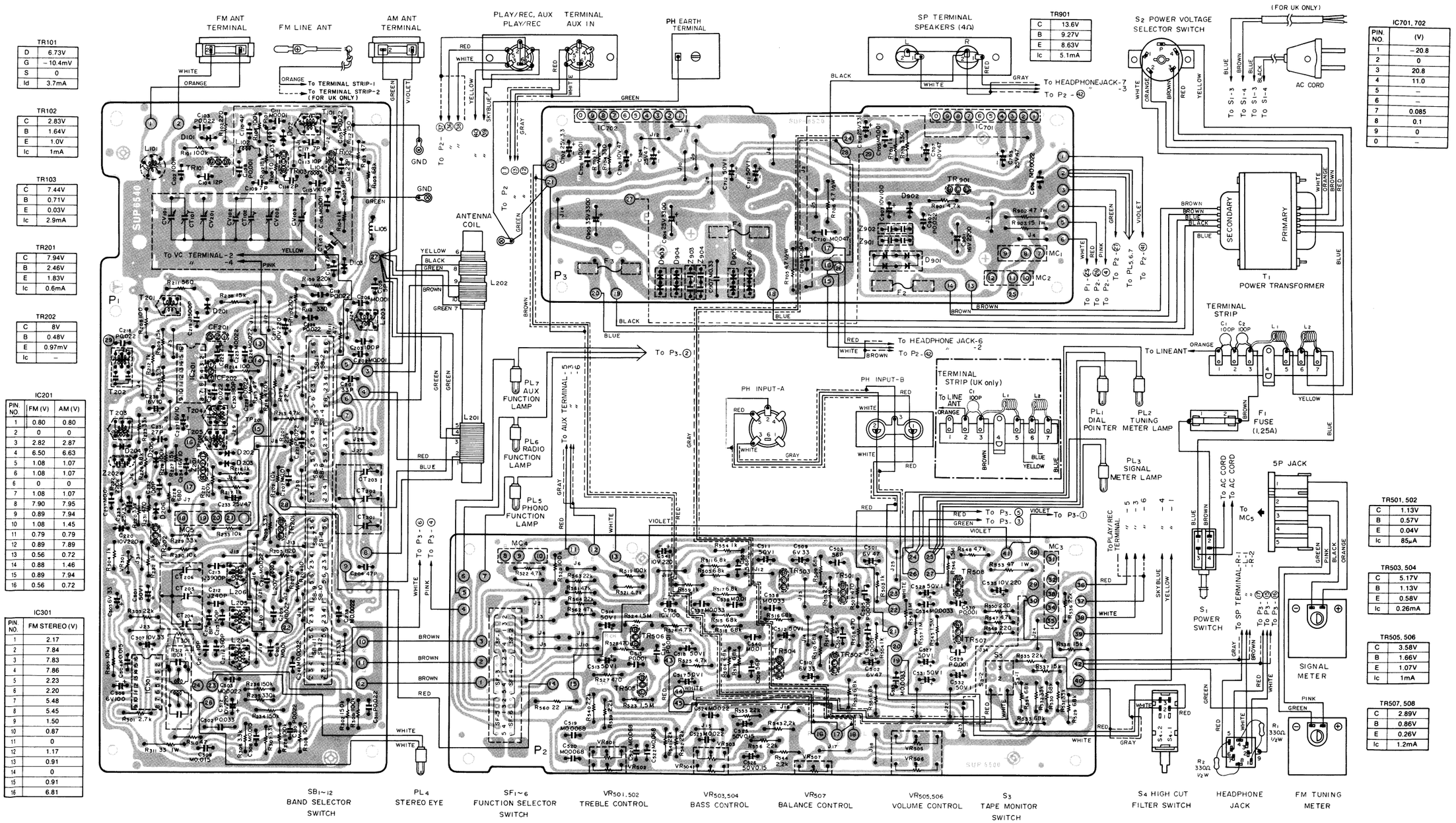
NOTES: 1. Part numbers are indicated on most mechanical parts.
2. SAFETY indicates that only parts specified by the manufacturer be used for replacement in critical circuits.
3. A ~ C rank. A rank parts will cover 80% of repair needs.
A + B rank parts will cover 95% of repair needs.
C rank parts are less necessary.

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
TRANSISTORS				
TR101	2SK49	Transistor, (FET) FM RF Amplifier	1	A
TR102,103	2SC1675-L	Transistor, FM Oscillator and Mixer	2	A
TR201	2SC1359	Transistor, AM Converter	1	A
TR202	2SC828	Transistor, Phono Amplifier	1	A
TR501~504	2SC1327	Transistor, RF Tuning	4	A
TR505~508	2SC900	Transistor, AF Amplifier	4	A
TR901	2SC1383	Transistor, Ripple Filter	1	A
INTEGRATED CIRCUITS				
IC201	AN217	IC, FM and AM IF Amplifier	1	A
IC301	AN271B	IC, FM MPX Amplifier	1	A
IC701,702	STK025G	IC, Power Amplifier	2	A
DIODES				
D103	SC-15	Diode, FM AFC	1	A
D202,203	2OA90	Diode, FM Detector	2	A
D101,102,201,204, 205	OA90	Diode, FM AGC, AM D.AGC, AM Detector	5	A
D206	VD1121	Diode, AOC	1	A
D901	S1RB10	Diode, Rectifier	1	A
D902	02Z9.5A	Diode, Stabilizer	1	A
D903,904	10DC1R	Diode, Rectifier	2	A
D905,906	10DC1	Diode, Rectifier	2	A
INDICATORS				
ME1	SSM48	Signal Meter	1	A
ME2	SSM50	FM Tuning Meter	1	A
LAMPS AND FUSES				
PL1,2,3	XAMR53X300	Pilot Lamp, Dial Pointer, Signal and Tuning Meter SAFETY	3	A
PL4,5,6,7	XAMR34X500-1	Pilot Lamp Stereo Eye and Function Lamp SAFETY	4	A
F1	XBAS2A1201	Fuse 1.25A (Primary) SAFETY	1	A
F2	XBAS2A1004	Fuse 1A (Third) SAFETY	1	A
F3,4	XBA2C31TR0	Fuse 3.15A (Secondary) SAFETY	2	A
COILS AND TRANSFORMERS				
L101	SLA4N2-O	Antenna Coil, FM	1	A
L102	RLD4N30	Coil, FM Collector	1	A
L103	RLQY30S1-O	IF Trap Coil, FM	1	A
L104	SLO4N12-O	Oscillator Coil, FM	1	A
L105	ELQ5A9R	Coil, Choke	1	A
L201,202	SLF6G26-O	Ferrite Antenna Coil, MW and LW	1	A
L203	SLA3M2	Antenna Coil, SW	1	A
L204	SLO2M2-M	Oscillator Coil, MW	1	A
L205	SLO1M2	Oscillator Coil, LW	1	A
L206	RLO3M14	Oscillator Coil, SW	1	A
L207	RLQY25S-5	Coil, Choke	1	A
L1,2	SLQY35S-2S	Coil, Radio Frequency	2	B
T101	RLI4M101	IFT, FM 1st	1	A
T201	SLI2M102	IFT, AM 1st	1	A
T202	RLI7W105R-T	CFT, AM SG-250R	1	A
T202	SLI9W104P-T	CFT, AM (UK only) SG-25Q	1	A
T203	RLI2M402	IFT, AM 2nd	1	A
T204	RLI4M501-M	IFT, FM Discriminator (Primary)	1	A
T205	RLI4M502-M	IFT, FM Discriminator (Secondary)	1	A
T301	RLM1Z3Q-K	MPX Coil, FM	1	A
CF201,202	RVFCF10M12CR	CFT, FM	2	A
T1	SLT5Z4-W	Power Transformer SAFETY	1	○A
COMPONENT COMBINATION				
Z201	EXA5DL04C	Component Combination 330pF (Three) 4.7K (two)	1	B
Z202	EXAF203Z471	Component Combination 0.02mfd (two), 470 ohm	1	B
Z901~904	EXNF2SL04C	Component Combination 0.01mfd (two)	4	B

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
RESISTORS				
R108,204	ERD25TJ100	10 1/4W ±5% Carbon	2	C
R111,207,215,310	ERD25TJ470	47 1/4W ±5% Carbon	4	C
R208,214	ERD25TJ101	100 1/4W ±5% Carbon	2	C
R112	ERD25TJ151	150 1/4W ±5% Carbon	1	C
R102,549,550	ERD25TJ221	220 1/4W ±5% Carbon	3	C
R113,703,704	ERD25TJ331	330 1/4W ±5% Carbon	3	C
R231,507,508,527 528	ERD25TJ471	470 1/4W ±5% Carbon	5	C
R211	ERD25TJ561	560 1/4W ±5% Carbon	1	C
R228	ERD25TJ681	680 1/4W ±5% Carbon	1	C
R205	ERD25TJ821	820 1/4W ±5% Carbon	1	C
R104,212,216,217, 232,304,503,504, 554,559,701,702	ERD25TJ102	1k 1/4W ±5% Carbon	12	C
R209	ERD25TJ152	1.5k 1/4W ±5% Carbon	1	C
R513,514,539,540, 543,544	ERD25TJ222	2.2k 1/4W ±5% Carbon	6	C
R301	ERD25TJ272	2.7k 1/4W ±5% Carbon	1	C
R203,210,306,307	ERD25TJ332	3.3k 1/4W ±5% Carbon	4	C
R103,213,521,522, 525,526,547,548, 901	ERD25TJ472	4.7k 1/4W ±5% Carbon	9	C
R224,511,517, 518,551,552	ERD25TJ682	6.8k 1/4W ±5% Carbon	7	C
R202,230,233,305	ERD25TJ103	10k 1/4W ±5% Carbon	4	C
R227,238,537,538	ERD25TJ153	15k 1/4W ±5% Carbon	4	C
R107	ERD25TJ183	18k 1/4W ±5% Carbon	1	C
R201,203,535,536, 541,542,555,556, 563,564	ERD25TJ223	22k 1/4W ±5% Carbon	10	C
R220,223,229,237, 531,532	ERD25TJ333	33k 1/4W ±5% Carbon	6	C
R561,562	ERD25TJ473	47k 1/4W ±5% Carbon	2	C
R105,505,506,509, 510,515,516,529, 530,533,534	ERD25TJ683	68k 1/4W ±5% Carbon	11	C
R101,106,219,226, 308,309,519,520	ERD25TJ104	100k 1/4W ±5% Carbon	8	C
R234,236,302	ERD25TJ154	150k 1/4W ±5% Carbon	3	C
R312	ERD25TJ184	180k 1/4W ±5% Carbon	1	C
R109,110,221,222	ERD25TJ224	220k 1/4W ±5% Carbon	4	C
R235	ERD25TJ334	330k 1/4W ±5% Carbon	1	C
R218	ERD25TJ474	470k 1/4W ±5% Carbon	1	C
R557,558	ERD25TJ105	1M 1/4W ±5% Carbon	2	C
R523,524,545,546	ERD25TJ155	1.5M 1/4W ±5% Carbon	4	C
R903	ERG1ANJ150	15 1W ±5% Metal Film SAFETY	1	C
R239,560	ERG1ANJ220	22 1W ±5% Metal Film SAFETY	2	C
R311	ETG1ANJ330	33 1W ±5% Metal Film SAFETY	1	C
R553,902	ERG1ANJ470	47 1W ±5% Metal Film SAFETY	2	C
R705,706	ERD50TJ4R7	4.7 1/2W ±5% Carbon	2	C
R1,2	ERD50TJ331	330 1/2W ±5% Carbon	2	C
		CAPACITORS		
C114	ECCD1H020C	2pF 50WV ±0.25pF Ceramic	1	C
C110	ECCD1H040C	4pF 50WV ±0.25pF Ceramic	1	C
C205	ECCD1H050D	5pF 50WV ±0.5pF Ceramic	1	C
C109,117	ECCD1H070D	7pF 50WV ±0.5pF Ceramic	2	C
C107,116,216	ECCD1H080D	8pF 50WV ±0.5pF Ceramic	3	C
C113,214	ECCD1H100D	10pF 50WV ±0.5pF Ceramic	2	C
C104	ECCD1H120K	12pF 50WV ±10% Ceramic	1	C
C112	ECCD1H220K	22pF 50WV ±10% Ceramic	1	C
C222,231	ECCD1H270K	27pF 50WV ±10% Cermaic	2	C
C201	ECCD1H330K	33pF 50WV ±10% Ceramic	1	C
C204	ECCD1H470K	47pF 50WV ±10% Ceramic	1	C
C503,504,507,508	ECCD1H560K	56pF 50WV ±10% Ceramic	4	C
C102,203,232	ECCD1H101K	100pF 50WV ±10% Ceramic	3	C
C230	ECCD1H131K	130pF 50WV ±10% Ceramic	1	C
C115	ECCD1H100KV	10pF 50WV ±10% Ceramic	1	C
C106,111,202,206, 706	ECKD1H102MD	0.001 50WV ±20% Ceramic	6	C
C533,534	ECKD1H332MD	0.0033 50WV ±20% Ceramic	2	C
C519,520	ECKD1H682MD	0.0068 50WV ±20% Ceramic	2	C
C207,208,237	ECKD1H103MD	0.01 50WV ±20% Ceramic	3	C
C308,309	ECKD1H153MD	0.015 50WV ±20% Ceramic	2	C
C223,226,209,210, 523,524	ECKD1H223MD	0.022 50WV ±20% Ceramic	6	C
C239,241,303	ECKD1H222MD	0.0022 50WV ±20% Ceramic	3	C
C302	ECKD1H333MD	0.033 50WV ±20% Ceramic	1	C
C521,522	ECKD1H683MD	0.068 50WV ±20% Ceramic	2	C
C108,505,506,515, 516,529,530	ECKD1H102PF	0.01 50WV +100,−0% Ceramic	7	C
C310,311,902,103, 105,118,218,221, 224,228,236	ECKD1H223PF	0.022 50WV +100,−0% Ceramic	11	C
C215	ECQS1151JZ	150pF 100WV ±5% Styrol	1	C
C212	ECQS1241JX	240pF 100WV ±5% Styrol	1	C
C211	ECQS1361JZ	360pF 100WV ±5% Styrol	1	C
C219	ECQS1152JZ	1500pF 100WV ±5% Styrol	1	C
C213	ECQS1392JZ	3900pF 100WV ±5% Styrol	1	C
C539,540	ECQM05103MZ	0.01 100WV ±20% Polyester	2	C
C304	ECQM05153MZ	0.05 100WV ±20% Polyester	1	C
C908	ECQM05223MZ	0.022 100WV ±20% Polyester	1	C
C537,538	ECQM05333MZ	0.033 100WV ±20% Polyester	2	C
C709,710	ECQM05473MZ	0.047 100WV ±20% Polyester	2	C

WIRING DIAGRAM OF MODEL SG-250R/25Q



TR101	
D	6.73V
G	−10.4mV
S	0
Id	3.7mA

TR102	
C	2.83V
B	1.64V
E	1.0V
Ic	1mA

TR103	
C	7.44V
B	0.71V
E	0.03V
Ic	2.9mA

TR201	
C	7.94V
B	2.46V
E	1.83V
Ic	0.6mA

TR202	
C	8V
B	0.48V
E	0.97mV
Ic	–

TR901	
C	13.6V
B	9.27V
E	8.63V
Ic	5.1mA

IC701, 702	
PIN NO.	(V)
1	−20.8
2	0
3	20.8
4	11.0
5	–
6	–
7	0.085
8	0.1
9	0
0	–

IC201		
PIN NO.	FM (V)	AM (V)
1	0.80	0.80
2	0	0
3	2.82	2.87
4	6.50	6.63
5	1.08	1.07
6	1.08	1.07
7	0	0
8	1.08	1.07
9	7.90	7.95
10	0.89	7.94
11	1.08	1.45
12	0.79	0.79
13	0.89	7.89
14	0.56	0.72
15	0.88	1.46
16	0.89	7.94
	0.56	0.72

IC301	
PIN NO.	FM STEREO (V)
1	2.17
2	7.84
3	7.83
4	7.86
5	2.23
6	2.20
7	5.48
8	5.45
9	1.50
10	0.87
11	0
12	1.17
13	0.91
14	0
15	0.91
16	6.81

TR501, 502	
C	1.13V
B	0.57V
E	0.04V
Ic	85μA

TR503, 504	
C	5.17V
B	1.13V
E	0.58V
Ic	0.26mA

TR505, 506	
C	3.58V
B	1.66V
E	1.07V
Ic	1mA

TR507, 508	
C	2.89V
B	0.86V
E	0.26V
Ic	1.2mA

* This diagram might be modified without notice for further development of technology.

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
C907	ECQM05334MZ	0.33 100WV ±20% Polyester	1	C
C305,509,510	ECEA6V33	33 6WV Electrolytic	3	B
C501,502	ECEA6V47	47 6WV Electrolytic	2	B
C306	ECEA6V100	100 6WV Electrolytic	1	B
C407	ECEA10V33	33 10WV Electrolytic	1	B
C707,708	ECEA10V47	47 10WV Electrolytic	2	B
C536,903	ECEA10V100	100 10WV Electrolytic	2	B
C217,220,312,535, 541	ECEA10V220	220 10WV Electrolytic	5	B
C227,234,238	ECEA16V10	10 16WV Electrolytic	3	B
C901	ECEA16V2200	2200 16WV Electrolytic	1	B
C235	ECEA25V3R3	3.3 25WV Electrolytic	1	B
C233	ECEA25V4R7	4.7 25WV Electrolytic	1	B
C703,704	ECEA25V47	47 25WV Electrolytic	2	B
C301,511,512,513, 514,517,518,527, 528,531,532,711, 712	ECEA50V1	1 50WV Electrolytic	13	B
C701,702	ECAG16E3R3	3.3 50WV Electroytic	2	B
C904,905	ECET35R332SU	3300 35WV Electrolytic	2	B
C525,526	ECAG16ER15	0.15 16WV Electrolytic	2	B
C1,C2	ECKDDS101MD	100pF 250W ±5% Ceramic SG-250R SAFETY	2	B
C1	ECKDGS101MB3	100pF 250W ±5% Ceramic SG-25Q SAFETY	1	B
VARIABLE RESISTORS				
VR501~504	EWK8EA331A54	Variable Resistor, 50kA, Bass and Treble Control	2	A
VR505,506	EWFN3AK30A54	Variable Resistor, 50kA, Volume Control	2	A
VR507	EVH0UA363G54	Variable Resistor, 50kG, Balance Control	1	A
VR301	EVLT4A00B14	Semi-fixed V.R., 10kB, Separation Control	1	A
VARIABLE CAPACITORS				
CT101,102	SCVC158J124K	Tuning Capacitor	1	A
CT103	ECV1ZW10X32	Trimmer Capacitor	1	A
CT201,206	SCV3T12S	Trimmer Capacitor	2	A

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
SWITCHES				
SF1,2,5,6	SSR74K	Rotary Switch, Function Selector	4	A
SB	SSR76K	Rotary Switch, Band Selector	1	A
S1	ESB7067	Push Switch, Power ON-OFF SAFETY	1	A
S2	ESE3742	Switch, Voltage Selector SAFETY	1	A
S3	SSH52	Push Switch, Tape Monitor	1	A
S4	SSH32	Push Switch, High Filter	1	A
CHASSIS				
CH1	SUV108-1	Plastic Bracket, Power Switch	1	C
CH2	SDA32-1	Holder, Dial Pointer	1	C
CH3	SHG950-2	Cushion, Lamp	4	C
CH4	SDP580	Pointer, Dial	1	C
CH5	RHG211	Cushion, Lamp	2	C
CH6	RGH3-1	Rubber Cushion, Lead Antenna	1	C
CH7	SDD46K	Drum, Dial	1	C
CH8	RDS4170A	Spring, Dial	1	C
CH9	RDR20-2	Pulley, Dial	4	C
CH10	RDR23	Pulley, Dial	1	C
CH11	RNW150-2	Washer, Pulley	5	C
CH12	RDZ05-A	Dial Cord	1	C
CH13	SDT9302K	Tuning Shaft	5	B
CH14	RDY36	Shaft, Pulley	5	C
CH16	SHR112	Strain Relief, Power Cord	2	C
CH17	RHR969ZA	Latch	11	C
CH18	SUS184	Spring, Knob	3	B
CH19	RHG109	Cushion, F ANT	2	C
CH20	SUD114	Spacer A, Headphone Mounting	1	B
CH21	SUD74	Spacer B, Headphone Mounting	1	B
CH22	SUD112-1	Guide, Headphone	1	B
CH23	SUD84	Spacer, Power Cord (UK Only)	1	B
CH25	XTV3+8B	Screw, Escutcheon	3	C
CH26	XTW3+8ZFD	Screw, Bottom and Rear Cover	4	C
CH27	XYN4+C10S	Screw, Cabinet Mounting	4	C
CH29	SNE416	Nut, Headphone Jack	1	C
CH30	SJJ90	Headphone Jack	1	B
CH37	SMX124	Shield	1	B
CH38	SMX132	Barrier	1	B
CH31	SJF104	Fuse Holder SAFETY	1	B
CH32	RJF7A	Fuse Holder, Power Circuit SAFETY	6	B
CH33	SJS9202-1	Jack Board, FM ANT	1	C
CH34	SJS9206-1	Jack Board, AM ANT	1	C
CH35	SJF9206	Jack Board, REC	1	C
CH36	SJF9204	Jack Board, SPKR	1	C
CH40	SJR608	Terminal Board, 6P SAFETY	1	C

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REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
CH41	SJA116	Power Cord (UK Only) .. SG-25Q SAFETY	1	○B
CH41	SJA88	Power Cord .... SG-250R SAFETY	1	B
CH42	SKE282	Guide, Push Button	3	○C
CH43	SWK132	Connector Jack, 5P	1	C
CH44	SJS6502	Socket, Phono DIN	1	○C
CH45	SJF4102	Terminal Board, Earth	1	○C
CH46	SJF3204	Jack Board, 2P Phono	1	○C
		CABINET		
CA1	SKA1600	Cabinet Assembly (Black) ... SG-250R	1	○A
	SKA1602	Cabinet Assembly SG-250R	1	○A
	SKA1604	Cabinet Assembly SG-25Q	1	○A
CA2	SYU292	Bottom Cover Assembly	1	○A
CA3	SYL6-1	Foot	3	○B
CA4	SHS3018	Felt	1	○B
CA6	SKU2260	Rear Board SG-250R	1	○A
	SKU2261	Rear Board SG-25Q	1	○A
CA7	SGL88	Indicator, STEREO	1	○C
CA8	SBN666K	Knob, Tuning (Black)	1	○A
	SBN676K	Knob, Tuning (Silver)	1	○A
CA9	SBN668K	Knob, Selector and Volume Control (Black)	1	○A
	SBN678K	Knob, Selector and Volume Control (Silver)	6	○A
CA10	SGL90	Indicator, RADIO	1	○C
CA11	SGL92	Indicator, PHONO	1	○C
CA12	SGL94	Indicator, AUX	1	○C
CA13	SBC196	Push Button, Power (Black)	1	○A
	SBC186	Push Button, Power (Silver)	1	A
CA14	SBC198	Push Button (Black)	2	A
	RBC95ZA	Push Button (Silver)	2	A
CA15	SYP252	Escutcheon Assembly (Black) ... SG-250R	1	○A
	SYP254	Escutcheon Assembly (Black) ... SG25Q	1	○A
			1	○A
	SYP256	Escutcheon Assembly (Silver) ... SG-250R	1	○A
		PACKING		
PA1	SPN2470	Carton	1	○C
PA2	SPN2466	Pad (R)	1	○C
PA3	SPN2468	Pad (L)	1	○C

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
PA4	SQX5720	Instruction Book, English	1	○C
	SQX5722	Instruction Book, German/Danish/Spanish	1	○C
	SQX5724	Instruction Book, German/French/English	1	○C